LDCM

Landsat Data Continuity Mission

LDCM URLs
ldcm.nasa.gov/
ldcm.usgs.gov/

NASA and the U.S. Geological Survey (USGS) are currently developing a plan for a follow-on mission to Landsat 7 consistent with a December 23, 2005 memorandum from the Office of Science and Technology Policy. See LDCM Mission Status for additional details.

Points of Contact

- *LDCM Project Scientist:* James Irons, NASA Goddard Space Flight Center
- *LDCM Deputy Project Scientist:* Jeff Masek, NASA Goddard Space Flight Center

Other Key Personnel

- *LDCM Program Scientist:* Garik Gutman, NASA Headquarters
- *LDCM Program Executive:* Edward Grigsby, NASA Headquarters
- *LDCM Project Manager:* William Ochs, NASA Goddard Space Flight Center

Mission Type

Earth Observing System (EOS) Systematic Measurements

Launch

- *Date and Location:* To be determined
- *Vehicle:* To be determined

Relevant Science Focus Areas

(see NASA's Earth Science Program section)

- Carbon Cycle, Ecosystems, and Biogeochemistry
- Earth Surface and Interior

Related Applications

(see Applied Sciences Program section)

- Agricultural Efficiency
- Carbon Management
- Coastal Management
- Disaster Management
- Ecological Forecasting
- Energy Management
- Homeland Security
- Invasive Species
- Public Health
- Water Management

Key LDCM Facts

Joint with USGS

LDCM Project Science Office Support

Instruments: Phil Dabney, NASA GSFC

Calibration/Validation: Brian Markham, NASA GSFC, and Jim Storey, USGS

Data Acquisition: Vacant

LDCM Science Goals

- Characterize and monitor land-cover use and change over time for global climate research, polar studies, land use and land cover change, and the impacts of natural events as well as human activities on Earth's surface.

LDCM Measurement Goals

- Maintain data continuity with the Landsat system.
- Extend the Landsat record of multi-spectral, global coverage of the land surface at a moderate resolution on a seasonal basis.

LDCM Mission Background

LDCM is a joint interagency mission with the U.S. Geological Survey (USGS) to extend the Landsat record of multispectral, moderate-resolution, seasonal, global coverage of the Earth's land surface.

The Land Remote Sensing Act of 1992 directs NASA and USGS to assess various system-development and management options for a satellite system to succeed Landsat 7.

See Landsat 7 Mission description for historical details of the Landsat program.

LDCM Mission Status as of Winter/Spring 2006

(See LDCM websites for current information.)

On December 23, 2005, the Office of Science and Technology Policy (OSTP) issued a memorandum signed by Dr. John Marburger, III, adjusting the Landsat Data Continuity Mission strategy. NASA was instructed to acquire a single free-flyer spacecraft for this mission. The instrument will collect land surface data similar to that of its Landsat predecessors. The data will be delivered to the USGS, who will be responsible for mission operations as well as data collection, archiving, processing and distribution.

Efforts to implement an LDCM have been ongoing since the launch of Landsat 7 in 1999. Early plans called for NASA to purchase data meeting LDCM specifications from a privately owned and commercially operated satellite system. However, after an evaluation of proposals received from private industry, NASA cancelled the Request-for-Proposals (RFP) in September 2003.

In light of the RFP cancellation, an interagency working group was formed by the Executive Office of the President (EOP) to discuss new plans for Landsat data continuity. These discussions led to an August 13, 2004 OSTP memorandum that directed federal agencies to place Landsat-type sensors on National Polar-orbiting Operational Environmental Satellite System (NPOESS) platforms.

Following an evaluation of the technical complexity of integrating Landsat-type sensors on the NPOESS platforms, the December 2005 memorandum redirected the Departments of Commerce, Defense, the Interior, and NASA to: "proceed with the NPOESS program without incorporating a Landsat-type instrument."

The LDCM mandated by the December 2005 OSTP memorandum will collect and archive data consistent with data from the previous Landsat satellites. Expeditious progress towards the acquisition, launch, and operation of the LDCM spacecraft is anticipated, to minimize any possibility of a gap in Landsat data. Landsat 5 and Landsat 7 are still operational, but Landsat 5 is 22 years old and no redundancy remains for most of its mission critical subsystems. Landsat 7, which was launched in 1999, has lost the use of its Scan Line Corrector instrument and has lost gyro redundancy.

The U.S. Government ultimately endeavors to ensure long-term continuity of Landsat-like data. As stated in the December 2005 memorandum: "it remains the goal of the U.S. Government to transition the Landsat program from a series of independently planned missions to a sustained operational program funded and managed by a U.S. Government operational agency or agencies, international consortium, and/or commercial partnership. Concurrent with the actions cited [in the December 23, 2005 OSTP memorandum], the National Science and Technology Council, in coordination with NASA, DOI/USGS, and other agencies and EOP offices as appropriate, will lead an effort to develop a long-term plan to achieve technical, financial, and managerial stability for operational land imaging in accord with the goals and objectives of the U.S. Integrated Earth Observation System."

LDCM References

Irons, J. R., and W. R. Ochs, 2004: Status of the Landsat Data Continuity Mission. *2004 IEEE Int. Geosci. Remote Sens. Symp.*, Anchorage, AK, II, 1183–1185.

Irons, J. R., N. J. Speciale, J. D. McCuistion, J. G. Masek, B. L. Markham, J. C. Storey, D. E. Lencioni, and R. E. Ryan, 2003: Data specifications for the Landsat Data Continuity Mission. *2003 IEEE Int. Geosci. Remote Sens. Symp.*, Toulouse, France, II, 1335–1337.

McCuistion, J. D., C. D. Wende, and J. R. Irons, 2003: Landsat Data Continuity Mission: Creating a unique government-industry partnership for global research. *2003 IEEE Int. Geosci. Remote Sens. Symp.*, Toulouse, France, III, 1891–1893.